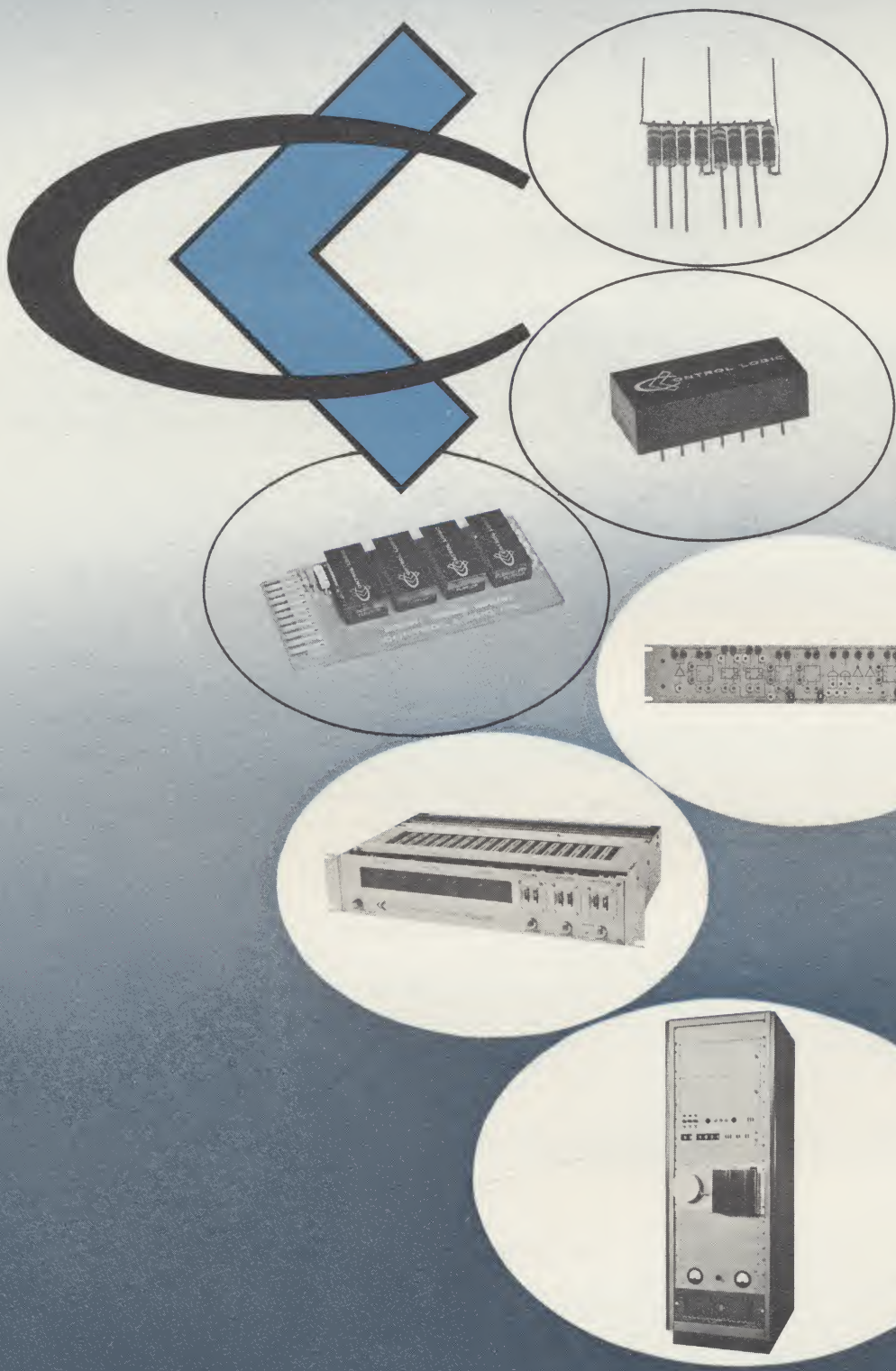
PRODUCT BROCHURE



CONTROL LOGIC, INC.

Natick Industrial Centre, Natick, Massachusetts

INTRODUCTION

Control Logic offers a single source for all digital requirements. Design, development and applications engineering embrace the full spectrum of digital components and equipments from welded modules to instruments and systems. The components and equipments described in this brochure and their related design capability provide *today's* most economical and reliable solution for your equipment design and manufacturing requirements.

The *true modularization* concept permits design and assembly of small or large control systems and equipments with a maximum of compatibility, efficiency and economy. All modules are compatible both mechanically and electrically and encompass broad selection of logic functions and input-output circuits. An extensive selection of accessories satisfy all requirements for breadboarding, prototype, equipment and system construction *(see page 3).*

These same products are utilized in the programmable console systems, type PE1, which are applied to training, design, simulation and testing. Any logic programmed on a console may be directly reproduced in a system from Control Logic's module inventory *(see page 4).*

A complete line of modular *System Components* offer storage, timing and logic functions with data word lengths of up to 6 BCD digits or 24 binary bits. They are constructed from the same family of circuit modules and provide custom systems from standard assemblies *(see page 5).*

Control Logic utilizes the *Series SC System Components* and the *Series DC Circuit Components,* in combination, to construct timing and control systems — for both military and industrial applications *(see page 6).*

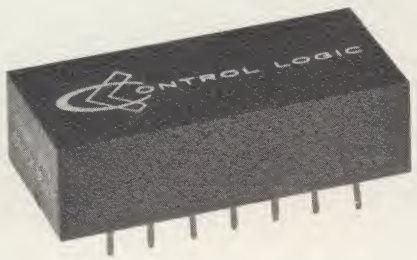
Custom circuit requirements requiring maximum circuit reliability and density are satisfied by Control Logic's welding facility. It brings to bear, for each requirement, the full utilization of experience and the capability of one of the most versatile production and research welding facilities in the country *(see page 7).*

Control Logic's staff will assist you in the utilization of — *today's product* today — for the most rapid and economical solution of your requirements.

CONTROL LOGIC

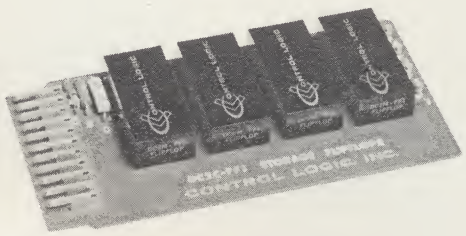
WELDED DIGITAL CIRCUIT MODULES

Control Logic modules are constructed by using the latest welding techniques for production of high-reliability, high-density electronic circuits. They present a family of compatible building blocks for timing, logic, data handling, and control for both industrial and space age applications. These modules combine exceptional reliability and performance with price economy and offer the utmost simplicity and flexibility in logical applications. All circuit series and accessories are available from stock.



CIRCUIT MODULES

These versatile, fifteen-pin modules measure only 0.8 x 1.7 x 0.5 inches, weigh less than one ounce, contain up to two circuits each, and satisfy any packaging requirement — they can be soldered, welded, or plugged for use in bread-boarding, or equipment and system construction. All component joints are entirely welded and, therefore, do not contain any solder or flux within the encapsulant.



CIRCUIT CARDS

Control Logic circuit cards measure 2.75 x 5.5 inches and mount from two to four standard welded circuit modules. Each card employs twenty-two terminations to provide all signal and supply voltage connections. Circuit outputs are also carried to test points to facilitate front-end equipment check-out. These easy-to-use circuits provide economy, compactness, and versatility of application in requirements ranging from simple logic networks to major data systems.

CIRCUIT SERIES

DCO1 **20 KC**
for control and automation

DCO1S **200 KC** silicon
for control and automation

DC1 **100 KC**
for general purpose data handling

DC2 **2 MC**
for general purpose data handling

DC2S **2 MC** silicon
for general purpose data handling

DC5/10 **5 MC/10 MC**
for high speed logic and timing

CIRCUIT SERIES

CIRCUIT SERIES	DCO1	DCO1S	DC1	DC2	DC2S	DC10	
Frequency	20kc	200kc	150kc	2mc	2mc	10mc	max.
Turn-on Time	3.5μs	1.0μs	1.5μs	150ns	150ns	50ns	max.
Turn-off Time	510μs	1.0μs	3.0μs	250ns	250ns	80ns	max.
Delay Times	1.5μs	0.5μs	1.0μs	50ns	50ns	25ns	max.
Logical 1 Level	−6V	+6V	−6.6V	−6.6V	+6.6V	−6.6V	±10%
Logical 0 Level	−0.2V	+0.4V	−0.3V	−0.5V	+0.5V	−0.5V	max.
Noise Threshold	1V	1V	1.2V	1.2V	1.2V	1.2V	max.
Loading	4	4	6	6	6	4	max.
Supply Voltages	±12V	±12V	±18V−6V	±18V−6V	±18V+6V	±18V−6V	±10%
Temperature	−55°C +55°C	−55°C +100°C	−55°C +55°C	−55°C +55°C	−55°C +100°C	−55°C +55°C	

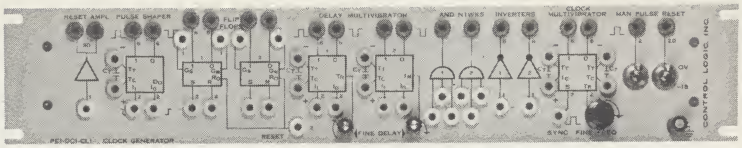
Catalogs and Technical Specifications: Request by Referencing Series Number

ACCESSORIES

Control Logic's Series PA1, Product Accessories, offers a comprehensive selection which allows the engineer to select his hardware in accordance with his requirements for bread-boarding, prototype, instrument or systems construction. Special emphasis has been given to these products to eliminate costly fabrication, special design and lost time by the design engineer.

Catalog: Request Brochure PA1

CONTROL LOGIC



PROGRAMMABLE DIGITAL EQUIPMENT

Control Logic Programmable Digital Circuit Panels, Series PE1, are a significant step forward in tools for system and equipment design. These panels, each containing a selection of either 100 KC or 2 MC transistorized welded digital circuit modules, provide research, development, design and test engineers with a convenient and economical means of applying digital techniques to the solution of their problems. Interconnection of circuitry for logic and equipment design — digital simulation and system test — or for logic training is a simple task of quickly translating logic diagrams via patchcord connections.

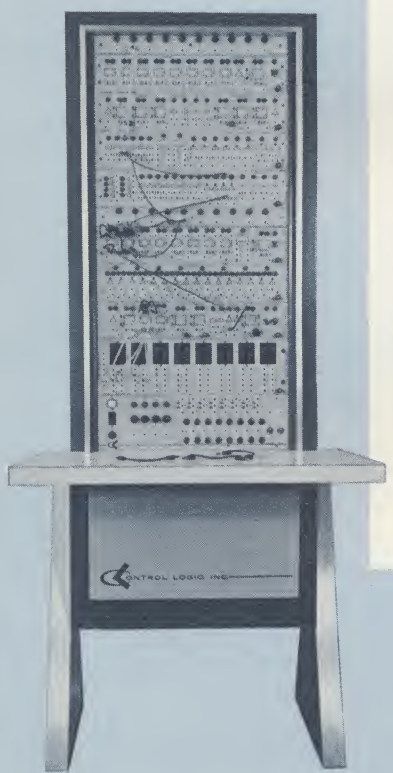
Control Logic Programmable Circuit Panels . . .

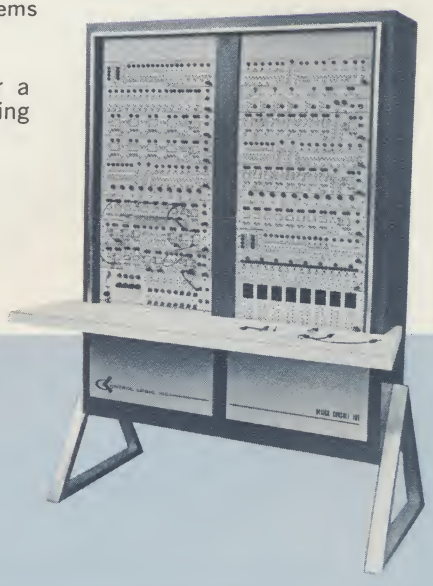
- are **extremely versatile,** a laboratory facility to simulate complete digital data and control systems;
- provide means of rapidly building and testing alternate techniques . . . **can improve your present system;**
- **reduce circuit requirements** to an absolute minimum;
- **are reusable,** repeated use of panels eliminates the cost of breadboard components which are normally bought, used and discarded;
- accomplish **system analysis** and test with a minimum of test equipment;
- **require no soldering,** experimental arrangements quickly patched, changed or taken down without waste of time and costly materials;
- **halve instruction time** by easily patchcording;
- **reduce digital design time** by weeks and certify final equipment operation;
- allow a firm **determination of exact arrangements required in each case;**
- **are easily applied** through color-coding, large logic symbols and load markings;

. . . and, many other beneficial programmable advantages!

Development of digital systems, programmable digital test equipment and other applications can be satisfied with your selection of any of these panels. General purpose design consoles, types PE1-10, and PE1-101, are also available as prebuilt equipment. These single and two-bay floor consoles contain a selection of panel types for logic design and test application and are complete systems with power, cooling and control facilities.

Contact your Control Logic engineering representative for a demonstration . . . or write for technical literature giving complete specifications.
Catalog: Request Panel Brochure Number Six.
System Specifications: Request PE1 System Brochure





CONTROL LOGIC

FUNCTIONAL DIGITAL SYSTEM COMPONENTS

FOR

CONSTRUCTION OF

DIGITAL DATA CONTROL

AND TIMING SYSTEMS

CUSTOM SYSTEMS FROM STANDARD ASSEMBLIES

Series SC is a family of functional sub-system "building blocks" for construction of data handling, control and timing systems. Each SC is a 3½" x 19" rack mounting unit which performs a specific storage, timing or logical function with data word lengths of up to 6 BCD digits or 24 binary bits.

Each SC function is modularized with standard plug-in printed circuit cards which facilitate changes in word length, operating frequency or the addition of specialized input-output timing and signal formats. The circuits are all welded, encapsulated modules which are mounted on the printed circuit cards.

The SC's are selected and compatibly integrated into an overall system in accordance with the system requirements. This combinational approach of SC's satisfies up to 80% of the system requirements which effects an extensive reduction in construction, check-out time and total system expenditure.

SERIES SC

TIME SYSTEM COMPONENTS		
	DK1	24 Hour Digital Clock
	MSC1	MS Clock Calibration Unit
	TCG1	Time Code Generator
	TCR1	Time Code Receiver
COUNTER REGISTERS		
	TFC1	Time Frequency Counter
	TCR1	Transfer Counter Register
	TSR1	Transfer Shift Register
	RC1	Reversible Counter
CONVERTERS		
	DAC101	0.1% Digital to Analog Converter
	ADC101	0.1% Analog to Digital Converter
OUTPUT		
	RO	4 to 9 Digit Visual Readout Unit
	DST1	Distribution Amplifier Unit
DECODING, ARITHMETIC		
	BDC1	4 Digit Bin to BCD/DEC Decoder
	PC1	6 Digit Parallel Comparator
	SA1	12 Bit Serial Adder, Subtractor
	PAC1	12 Bit Parallel Adder, Subtractor
	CC1	6 Bit Code Converter
	PG1	10 Bit Pattern Generator
	PP1	Programmer Distributor

Catalog: Request Brochure Number Four
Technical Specifications: Request by Referencing Series SC and Unit Number

CONTROL LOGIC

TIMING AND DATA CONTROL SYSTEMS

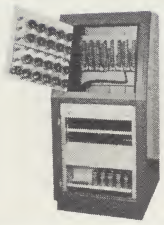
DIGITAL SYSTEMS

Control Logic offers an extensive background and experience in timing and control systems. Through the use of module mother-board construction, specialized equipment is designed with high flexibility, maximum density and minimum time. The high circuit density of Control Logic modules results in compact equipment and systems with considerable reduction in weight and size over open circuit cards. The welded assemblies provide increased reliability and over-all economies. Many system requirements can be completely fulfilled through the use of the SC series of modular system components while others may be a combination of standard logic circuits and SC^{s}. Maximum economies are achieved through the use of these standard — INVENTORIED — products.
Systems illustrated below demonstrate proven performance and capability — from sophisticated range timing systems to industrial control systems requiring comparable space age reliability.

"ADAT" AUTOMATIC DATA ACCUMULATOR AND TRANSFER SYSTEM

The ADAT System accepts random inputs from one to eight transducers simultaneously and then counts and stores the pulses over a preselected time period of from 10 to 999 seconds. At command, this stored information in the eight channels is punched out sequentially on IBM cards by means of an IBM 526 card punch.

The information in each channel is also sequentially displayed in both the input and readout modes by nixie tubes mounted for display in the front panel. Minimum and maximum information limits may be preset for alarm indication and control functions.



CONTROL SYSTEM FOR ALUMINUM ROLLING MILL

Mechanical constants for different rolling operations are determined by manually presetting a program into the system from the front panel. The control system then times the activation of each mill roller as well as an x-ray stock thickness gauge. It then signals and displays the progress of each rolling cycle.

Inputs to the system are received from tachometers. These tachometers are linked to mill roller motors which supply relay control signal outputs. The system employs 100 KC series DC1C card components for timing functions.

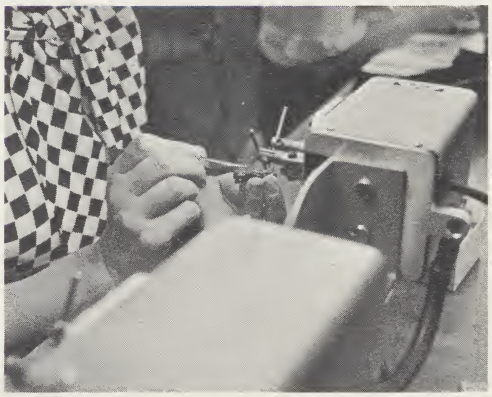
DATA DIGITIZING AND RECORDING SYSTEM

The data digitizing and recording system sequentially scans six analog input signals and converts these signals into digital form. The digitized data is formatted together with time and day information from the digital clock section and other manually preset data and transferred to the teletype code converter. Here the information is converted to standard five level teletype code and punched on paper tape. All sequencing and output formatting is controlled by the program control section.

Control Logic solicits your IFB's and RFQ's. Call your local Control Logic engineering representative for applications assistance or contact the systems group direct, at Massachusetts or California.

CUSTOM CIRCUIT WELDING

Control Logic is a modern integrated facility for the design and fabrication of electronic modules and sub-systems utilizing the latest welding equipment and techniques. It is one of the most versatile circuit module welding facilities in the country, with all of the procedures and controls necessary to optimize every phase of these efforts. Control Logic personnel have years of experience in process development know-how, evaluation, fabrication and test, plus excellent equipment which provides the ability to offer quick service and highly reliable welded circuits and devices.

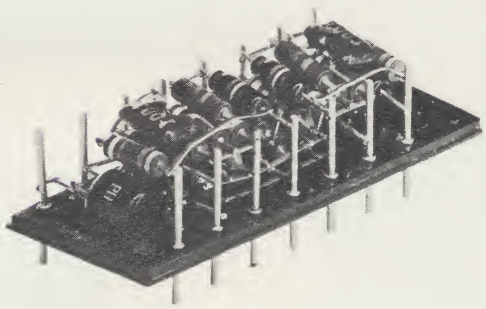


The air-conditioned facilities incorporate temperature, humidity, and dust control features, important to product quality and performance. Personnel with engineering and production backgrounds in the welded electronic assembly field determine equipment needs, methodize processes, design tools and special equipment, analyze shop performance standards, and determine the quality control procedures.

Welding assembly-line personnel are trained and qualified to rigorous standards. All production is performed to an established and strictly regulated reliability program. Control Logic offers this complete capability and experience to design and produce your circuit modules, digital or analog, and deliver quality products on schedule.

ADVANTAGES OF WELDED MODULES

- Maximum Reliability
- Packaging Flexibility
- Minimum Volume
- Weight Reduction
- Minimum Spares Required
- Design Flexibility
- Environmental Suitability
- Economy



Brochure: Request "Welding"

CONTROL LOGIC

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